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chloride solutions are oily to the touch and serve to make cotton thread pliable.

The reviewer does not wish to give the idea that this work is chiefly technical; it is not; it is a scientific text-book of the highest rank; but the author notices briefly many important modern uses of common substances which are not known to the average teacher of chemistry, but should be known to the average advanced student. We find descriptions and drawings of apparatus for making argon, helium, liquid air (Linde), liquid oxygen (both Pictet and Cailletet) and fluorine (Moissan). Each chapter has an appendix on 'Technique and Experiments,' in which the best laboratory and lecture-room experiments are described with drawings; the author's previous books on inorganic and organic preparations are guarantee that this part of the work is excellent.

One feature in the book calls for adverse criticism. No mention is made of relations between the atomic weights and properties of elements till the close of the book, where one page is given to relations like those existing between the atomic weights of the halogens, and two pages to the periodic system. No mention is made of the periodic law as a generally recognized law. The author says: "Mendelejeff has definitely stated that the properties of the elements are periodic functions of their atomic weights;" and this is the only reference to such a law. This seems to the reviewer a serious blemish in a book otherwise so excellent. It may be that the author feels towards the periodic law as the Irishman felt towards government, but at least a fuller discussion of the subject is desirable. Surely the recognition given of late years to the 'family' relations of the elements, and the use of the periodic system throughout text-books, have been a great help to students. One misses this in the author's treatment of the halogens, for example; yet the single halogens and their compounds are so well discussed, and the chapter on iodine is such a masterpiece, full of information, some of which will be new to most college professors, that it becomes hard to criticise anything so good.

This work is an excellent text-book for advanced college students; it is an excellent book of reference for the lecturer and high-school

teacher, and it should be carefully read by college professors. E. R.

Lecture Notes on the Theory of Electrical Measurements. By WILLIAM A. ANTHONY. New York, John Wiley & Sons. Pp. 90.

This little volume is designed to furnish the student with the broad outlines of the subject treated, and to thus assist him in getting possession of the subject as more elaborately presented in a series of lectures. The fundamental equations upon which electrical measurements are based are given, and the physical conditions to which they apply are stated with clearness. The book opens with a short chapter on C.G.S. units. Then follow chapters on the magnetic field, current, potential and electromotive force and resistance, with a statement of Ohm's law. The international electrical units are then treated. The general plan of measuring resistance, current and potential is explained, the instruments used being represented in diagram. The second branch of the subject closes with a treatment of the methods of calibrating amperemeters, voltmeters, resistance sets and bridge wires. The remaining portion of the work, comprising sixteen pages, is devoted to the effects of the current in heating, glow and arc lighting, electrolysis and electro-magnetic induction. The electro-magnetic circuit is also discussed. The book is provided with an index and table of contents.

F. E. N.

The Mechanical Composition of Wind Deposits.

By JOHAN AUGUST UDDEN. (Augustana Library Publications, No. 1.) Rock Island, Illinois. 1898. Large 8vo. Pp. 69.

Professor Udden has for some years been engaged in researches concerning the mechanical composition of the loess skirting Mississippi River, and has been led to a comparative study of the composition of other deposits, especially of eolic origin, and also to a highly-refined investigation of atmospheric dust; and his principal results, with many of the details, are incorporated in this memoir. For convenience, he classifies wind-deposits in eleven grades, from coarse gravel (8-4 millimeters in diameter) to very fine dust ($\frac{1}{128}$ - $\frac{1}{256}$ millimeters in diameter), and the examination was so conducted as

to ascertain the magnitude of the particles and the relative proportions of the different grades in terms of this scale. "Down to the particles measuring one-eighth of a millimeter all the separations were made by sieves, and below this the per cent of the weight of each grade was determined by microscopic measurements and by calculation from the number of grains counted in each grade" (page 6). Acknowledgment is made to Professor Milton Whitney for information concerning the mechanical analyses in the United States Department of Agriculture. The deposits examined include drifting sand, both rolled and dune, from Illinois, Indiana, Kansas, Nebraska, North Dakota and Massachusetts; and lee sand from Illinois, Kansas and North Dakota. In addition, special attention was given to atmospheric dust, formed and carried under various conditions, which was collected by ingenious devices. In the final pages the author discusses the principles of what may be called eolation, *i. e.*, eolic erosion (the deflation of Walther) and eolic deposition, and he refers to the bearing of the researches on the problem of the loess, though wisely withholds final judgment concerning the solution of the problem. The memoir carries inherent evidence of patient and painstaking labor; and, since the labor extended into a little-wrought but important field, it must take rank as a notable contribution to geology.

W J M.

SCIENTIFIC JOURNALS.

THE *American Journal of Science* for November contains the following articles:

'Another Episode in the History of Niagara Falls:' By J. W. Spencer. 'Apparatus for Measuring very High Pressures:' By A. deF. Palmer, Jr. 'Application of Iodine in the Analysis of Alkalies and Acids:' By C. F. Walker and David H. M. Gillespie. 'Associated Minerals of Rhodolite:' By W. E. Hinden and J. H. Pratt. 'Revision of the Moraines of Minnesota:' By J. E. Todd. 'Preliminary Report on some new marine Tertiary horizons discovered by Mr. J. B. Hatcher near Punta Arenas, Magellanes, Chile:' By A. E. Ortmann. 'Comparative Value of Different Kinds of Fossils in Determining Geological Age:' By O. C. Marsh. 'Families of *Sauropodus* and *Inosauria*:' By O. C. Marsh. 'Biotite-tinguaita Dike from Manchester by the Sea, Essex

County, Mass.:' By A. S. Eakle. 'Descriptions of new American Actinians with critical notes on other species, I.:' By A. E. Verrill.

THE *Journal of Comparative Neurology*, published quarterly at Granville, Ohio, and edited by President C. L. Herrick, Dr. O. S. Strong and Dr. C. Judson Herrick, has added to its collaborators Professor C. F. Hodge, of Clark University (Neurocytology, especially functional changes in nerve cells); Dr. G. H. Parker, Harvard University (The sense organs and nervous system of the invertebrates), and Professor A. D. Morrill, Hamilton College (The sense-organs of the vertebrates).

THE *Educational Review* for November opens with an article on the 'Status of the American Professor,' by 'One of Them.' The author urges that the American professor, with the exception of those in several of our larger universities, lacks a proper income, proper authority and proper leisure. Especial attention is called to the unfortunate fact that a college instructor can often only secure the advancement that is his due by securing a call from another university. The author might have added that the conditions are peculiarly bad in America, where an offer from a university is usually given privately and sometimes confidentially. In Germany a vacant position is usually offered to the man who is thought to be the best and who at the time holds a position that is considered less desirable, without regard to whether he is likely to accept or not. The German professors and docents have thus in their own subjects a rank depending on their reputation and efficiency, which is tolerably well known to the authorities of all the universities.

SOCIETIES AND ACADEMIES.

SECTION OF GEOLOGY AND MINERALOGY OF THE
NEW YORK ACADEMY OF SCIENCES,

OCTOBER 17, 1898.

THE first paper, by Professor J. F. Kemp, on the Minerals of the Copper Mines at Ducktown, Tenn., gave a brief history of the mines and described some of the processes employed in treating the ores, and the character of the rocks and associated minerals. The paper was illustrated with an extended series of lantern views